Claims

1. Conveyor for material, comprising

a circulating tube circuit,

a series of conveyor flights placed so as to be movable in the circulating tube circuit, comprising one or more first conveyor flights comprising a component made of an electrically conductive and/or magnetic material,

one or more spacers for spacing apart the conveyor flights in the circulating tube circuit, and

a drive mechanism comprising a number of coils placed consecutively along a drive member of the circulating tube circuit, which coils generate a varying magnetic field within a drive path for driving the first conveyor flights situated within the drive path in a drive direction.

2. Conveyor according to claim 1, wherein coils comprise loop-shaped or saddle-shaped windings that at least partially enclose the drive member of the tube circuit.

3. Conveyor according to claim 2, wherein the loop-shaped or saddle-shaped windings can be folded open for placing said windings around the drive member of the tube circuit.

4. Conveyor according to claim 1, 2 or 3, wherein the drive mechanism comprises a controlling device for controlling the coils for generating a magnetic field that travels along the drive path.

5. Conveyor according to claim 4, wherein the drive mechanism comprises sensors for detecting a position of at least a first conveyor flight with respect to the coils, and wherein the sensors are connected to the controlling device for transmitting data regarding the position to the controlling device.

6. Conveyor according to claim 5, wherein the sensors and/or the controlling device are adapted for determining the speed of the first conveyor flight.

7. Conveyor according to claim 5 or 6, wherein the controlling device is adapted for excitation of the coils in dependency on the position and/or the speed of the first conveyor flight.

8. Conveyor according to claim 5, 6 or 7, wherein the sensors are placed upstream of the coils and/or between the windings of the coils.

9. Conveyor according to any one of the preceding claims, wherein the drive member is placed in or near a bend in the tube circuit.

10. Conveyor according to any one of the preceding claims, wherein a conveyance tube of at least a part of the tube circuit at least near a drive member of the circulating tube circuit, is substantially made of a synthetic material.

11. Conveyor according to any one of the preceding claims, wherein the component of the first conveyor flights comprises first magnets, preferably Nd-magnets.

12. Conveyor according to claim 11, wherein on both sides of the first magnets metal plates, preferably steel plates, are placed.

13. Conveyor according to any one of the preceding claims, wherein each of

the conveyor flights comprises at least one disk-shaped body having an outer circumference that is at least almost equal to the inner circumference of the tube circuit.

14. Conveyor according to claim 13, wherein the disk-shaped body comprises a circumferential edge which circumferential edge projects out of the plane of the disk-shaped body.

15. Conveyor according to claim 14, wherein the circumferential edge projects substantially perpendicular out of the plane of the disk-shaped body.

16. Conveyor according to claims 13 or 14, wherein the circumferential edge on both sides of the disk-shaped body projects out of the plane of the disk-shaped body.

17. Conveyor provided with first conveyor flights according to any one of the claims 13-16, wherein the component of said first conveyor flights is placed in or at the disk-shaped body.

18. Conveyor according to any one of the preceding claims, wherein the one or more spacers comprise a circulating endless conveyance means, wherein the conveyor flights are coupled to the conveyance means at at least a regular distance from each other.

19. Conveyor according to any one of the claims 1-17, wherein the conveyor flights each comprise a spacer, wherein the spacer projects from the conveyor flights in the direction of a next adjacent conveyor flight in the tube circuit.

20. Conveyor according to claim 19, wherein the spacer of a conveyor flight can be coupled to a next adjacent conveyor flight.

21. Conveyor according to claim 19 or 20, when depending on any one of the claims 13-17, wherein the one or more spacers substantially connect to the centre of the disk-shaped body.

22. Conveyor according to any one of the preceding claims, wherein the conveyor comprises one or more magnet means placed along the tube circuit for generating a magnetic field for urging at least the first conveyor flights to the centre of a tube of the tube circuit.

23. Conveyor according to claim 22, wherein the magnet means comprise electromagnets.

24. Conveyor according to claim 22 or 23, wherein a conveyance tube of at least a part of the tube circuit at least near the magnet means, is substantially made of a non-magnetic material, preferably of synthetic material.

25. Conveyor according to any one of the preceding claims, wherein a wall of the conveyance tube of at least a part of the tube circuit is provided with one or more guides placed in the tube circuit and extending along the drive direction, which guides guide a medium, such as for instance light, electricity, a fluid or a fluid pressure, wherein the conveyor comprises a wear sensor which is connected to the one or more guides for detecting deviations in the medium, such as for instance a variation in the light intensity, electric voltage or fluid pressure.

26. Drive mechanism suitable and intended for driving a conveyor according to any one of the preceding claims.

27. Drive mechanism for a conveyor for material comprising a circulating

tube circuit, a series of conveyor flights placed so as to be movable in the circulating tube circuit, comprising one or more first conveyor flights comprising a component made of a magnetic material, one or more spacers for keeping the conveyor flights spaced apart from each other in the circulating tube circuit, wherein the drive mechanism comprises one or more coils that are placed fixedly near a drive member of the circulating tube circuit, which coils generate a varying magnetic field within a drive path for driving the first conveyor flights situated within the drive path in a drive direction.

28. Drive mechanism according to claim 27, wherein the coils comprise loop-shaped or saddle-shaped windings that at least partially enclose the drive member of the tube circuit, and wherein the loop-shaped or saddle-shaped windings preferably can be folded open for placing said windings around the drive member of the tube circuit.

29. Guiding device for a conveyor for material comprising a circulating tube circuit, a series of conveyor flights placed so as to be movable in the circulating tube circuit, comprising one or more first conveyor flights comprising a component made of a magnetic material, one or more spacers for spacing the conveyor flights apart from each other in the circulating tube circuit, wherein the guiding device comprises one or more magnet means placed along the tube circuit for generating a magnetic field for urging at least the first conveyor flights to the centre of a tube of the tube circuit.

30. Conveyor flight suitable and intended for use in a conveyor according to any one of the preceding claims 1-25.

31. Conveyor flight for placing in a circulating tube circuit of a conveyor for material, wherein the conveyor flight comprises a disk-shaped body provided with one of two end surfaces, and provided with one or more spacers.

32. Conveyor flight according to claim 31, wherein the one or more spacers extend from the disk-shaped body substantially along an axis through the centre of the disk-shaped body, substantially perpendicular to at least one of the two end surfaces of the disk-shaped body.

33. Conveyor flight according to claim 31 or 32, wherein the disk-shaped body comprises a circumferential edge, which circumferential edge projects out of at least one of the two end surfaces of the disk-shaped body, wherein the circumferential edge preferably projects substantially perpendicular out of at least one of the two end surfaces of the disk-shaped body, and wherein the circumferential edge, preferably on both sides of the disk-shaped body, projects out of the end surfaces of the disk-shaped body.

34. Conveyor flight according to any one of the claims 31-34, wherein the disk-shaped body is provided with a component made of a magnetic material, wherein the component is placed in the disk-shaped body.

35. Conveyor flight according to claim 34, wherein the component comprises one or more magnets, wherein preferably on both sides of the one or more magnets metal plates have been placed, wherein the metal plates preferably comprise steel plates, and wherein said metal plates preferably extend substantially parallel with respect to at least one of the two end surfaces of the disk-shaped body.

36. Conveyor flight according to any one of the claims 30-35, wherein the conveyor flights, at least at an outer side, are at least partially made of UHMWPE.

37. Conveyance tube suitable and intended for use in a conveyor according to any one of the preceding claims 1-25.

38. Conveyance tube according to claim 37, wherein the conveyance tube is substantially made of synthetic material, preferably of polyurethane (PU).

39. Conveyance tube according to claim 38, wherein the conveyance tube is substantially made of an electrically conductive synthetic material.

40. Conveyance tube according to claim 38 or 39, wherein the conveyance tube is provided with an electrically conductive layer for discharging static electricity, wherein the electrically conductive layer preferably is disposed at the outer side of the conveyance tube, wherein the electrically conductive layer preferably comprises a carbon-filled synthetic material, preferably a carbon-filled recycled synthetic material.

41. Conveyor provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

42. Drive mechanism provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

43. Guiding device provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

44. Conveyor flight provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

45. Conveyance tube provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

46. Method for conveying material comprising one or more of the characterising steps described in the attached description and/or shown in the attached drawings.

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